

Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC148051

Page: 1 of 79

FCC Radio Test Report FCC ID: 2AIFVWDM-X5

Original Grant

Report No. : TB-FCC148051

Applicant: WUDOUMI ELECTRONICS TECHNOLOGY CO.,LTD

Equipment Under Test (EUT)

EUT Name : WIFI Card Reader

Model No. : WDM-X5

Series No. : N/A

Brand Name : WUDOUMI

Receipt Date : 2016-05-11

Test Date : 2016-05-12 to 2016-05-17

Issue Date : 2016-05-18

Standards : FCC Part 15, Subpart C (15.247:2015)

Test Method : ANSI C63.10: 2013

Conclusions : PASS

In the configuration tested, the EUT complied with the standards specified above,

The EUT technically complies with the FCC and IC requirements

Test/Witness Engineer:

Approved&

Authorized

fogla TOBY &

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1.0



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Page:

2 of 79

Contents

CON	NTENTS	2
1.	GENERAL INFORMATION ABOUT EUT	4
	1.1 Client Information	4
	1.2 General Description of EUT (Equipment Under Test)	
	1.3 Block Diagram Showing the Configuration of System Tested	
	1.4 Description of Support Units	5
	1.5 Description of Test Mode	6
	1.6 Description of Test Software Setting	7
	1.7 Measurement Uncertainty	7
	1.7 Test Facility	8
2.	TEST SUMMARY	9
3.	TEST EQUIPMENT	10
4.	CONDUCTED EMISSION TEST	11
	4.1 Test Standard and Limit	11
	4.2 Test Setup	
	4.3 Test Procedure	
	4.4 EUT Operating Mode	12
	4.5 Test Data	12
5.	RADIATED EMISSION TEST	17
	5.1 Test Standard and Limit	17
	5.2 Test Setup	18
	5.3 Test Procedure	19
	5.4 EUT Operating Condition	19
	5.5 Test Data	20
6.	RESTRICTED BANDS REQUIREMENT	45
	6.1 Test Standard and Limit	45
	6.2 Test Setup	45
	6.3 Test Procedure	45
	6.4 EUT Operating Condition	46
	6.5 Test Data	
7.	BANDWIDTH TEST	62
	7.1 Test Standard and Limit	62
	7.2 Test Setup	62
	7.3 Test Procedure	62
	7.4 EUT Operating Condition	
	7.5 Test Data	
8.	PEAK OUTPUT POWER TEST	69
	8.1 Test Standard and Limit	69



Page: 3 of 79

	8.2 Test Setup	69
	8.3 Test Procedure	
	8.4 EUT Operating Condition	69
	8.5 Test Data	
9.	POWER SPECTRAL DENSITY TEST	72
	9.1 Test Standard and Limit	72
	9.2 Test Setup	72
	9.3 Test Procedure	72
	9.4 EUT Operating Condition	72
	9.5 Test Data	73
10.	ANTENNA REQUIREMENT	79
	10.1 Standard Requirement	
	10.2 Antenna Connected Construction	



Page: 4 of 79

1. General Information about EUT

1.1 Client Information

Applicant : WUDOUMI ELECTRONICS TECHNOLOGY CO.,LTD

Address : 3F, Block 5, Xinjihui Industrial Zone, Bantian Town, Longgang,

Shenzhen, China

Manufacturer : WUDOUMI ELECTRONICS TECHNOLOGY CO.,LTD

Address: 3F, Block 5, Xinjihui Industrial Zone, Bantian Town, Longgang,

Shenzhen, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	1	WIFI Card Reader		
Models No.	1	WDM-X5		
Model Difference	•	N/A	TOBY	
	7	Operation Frequency 802.11b/g/n(HT20): 2		
		Number of Channel:	802.11b/g/n(HT20):11 channels see note(3)	
Product	T.	RF Output Power:	802.11b: 9.28 dBm 802.11g: 9.15 dBm 802.11n (HT20): 9.10 dBm	
Description Product	:	Antenna Gain:	1.8 dBi PCB Antenna	
TOT TO		Modulation Type:	802.11b: CCK, QPSK, BPSK 802.11g: OFDM 802.11n: OFDM	
	33	TOP	Bit Rate of Transmitter:	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n:up to 150Mbps
Power Supply		DC Voltage supplied DC power by Li-ion B	from Host System by USB cable. Battery.	
Power Rating	Š	DC 5.0V by USB cab DC 3.7V by 1400mAh		
Connecting I/O Port(S)	:	Please refer to the User's Manual		

Note:

- (1) This Test Report is FCC Part 15.247 for 802.11b/g/n, the test procedure follows the FCC KDB 558074 D01 DTS Meas Guidance v03r05.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



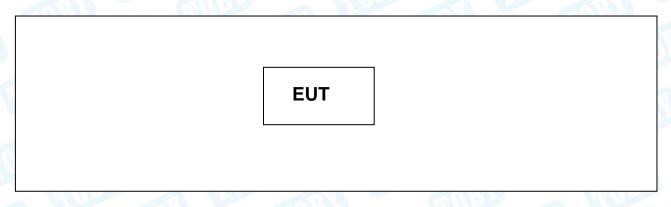
Page: 5 of 79

(3) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	05	2432	09	2452
02	2417	06	2437	10	2457
03	2422	07	2442	11	2462
04	2427	80	2447		

- (4) The Antenna information about the equipment is provided by the applicant.
- 1.3 Block Diagram Showing the Configuration of System Tested

TX Mode



1.4 Description of Support Units

The EUT has been test as an independent unit



Page: 6 of 79

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For (Conducted Test
Final Test Mode	Description
Mode 1	TX B Mode

For Radiated Test				
Final Test Mode	Description			
Mode 3	TX Mode B Mode Channel 01/06/11			
Mode 4	TX Mode G Mode Channel 01/06/11			
Mode 5	TX Mode N(HT20) Mode Channel 01/06/11			

Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

802.11b Mode: CCK (1 Mbps) 802.11g Mode: OFDM (6 Mbps)

802.11n (HT20) Mode: MCS 0 (6.5 Mbps)

- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a mobile unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.



Page: 7 of 79

1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN.

Test Software Version		RT5350 AP V1.0.0.3	
Channel	CH 01	CH 06	CH 11
IEEE 802.11b DSSS	DEF	DEF	DEF
IEEE 802.11g OFDM	DEF	DEF	DEF
IEEE 802.11n (HT20)	DEF	DEF	DEF

1.7 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U _{Lab})
	Level Accuracy:	
Conducted Emission	9kHz~150kHz	±3.42 dB
	150kHz to 30MHz	±3.42 dB
Dadiated Emission	Level Accuracy:	. 4 CO dD
Radiated Emission	9kHz to 30 MHz	±4.60 dB
Dadiated Emission	Level Accuracy:	. 4 40 dD
Radiated Emission	30MHz to 1000 MHz	±4.40 dB
Radiated Emission	Level Accuracy:	±4.20 dB
Radiated Effilssion	Above 1000MHz	±4.20 dB



Page: 8 of 79

1.7 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

FCC List No.: (811562)

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.



Page: 9 of 79

2. Test Summary

	FCC Part	15 Subpart C(15.247)/ RSS 247	Issue 1	
Standa	rd Section	T-110mm	100	Damani
FCC	IC	Test Item	Judgment	Remark
15.203	1	Antenna Requirement	PASS	N/A
15.207	RSS-GEN 7.2.4	Conducted Emission	PASS	N/A
15.205	RSS-GEN 7.2.2	Restricted Bands	PASS	N/A
15.247(a)(2)	RSS 247 5.2 (1)	6dB Bandwidth	PASS	N/A
15.247(b)	RSS 247 5.4 (4)	Peak Output Power	PASS	N/A
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	PASS	N/A
15.247(d)	RSS 247 5.5	Transmitter Radiated Spurious Emission	PASS	N/A

Note: "/" for no requirement for this test item.

N/A is an abbreviation for Not Applicable.



Page: 10 of 79

3. Test Equipment

Conducted	d Emission Te	est			
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Aug. 07, 2015	Aug. 06, 2016
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Aug. 07, 2015	Aug. 06, 2016
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Aug. 07, 2015	Aug. 06, 2016
LISN	Rohde & Schwarz	ENV216	101131	Aug. 08, 2015	Aug. 07, 2016
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Date
Radiation	Emission Tes	it T			Cal. Due
Spectrum Analyzer	Agilent	E4407B	MY45106456	Aug. 07, 2015	Aug. 06, 2016
EMI Test Receiver	Rohde & Schwarz	ESCI	100010/007	Aug. 07, 2015	Aug. 06, 2016
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 26, 2016	Mar. 25, 2017
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar. 26, 2016	Mar. 25, 2017
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 26, 2016	Mar. 25, 2017
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar. 26, 2016	Mar. 25, 2017
Pre-amplifier	Sonoma	310N	185903	Mar. 26, 2016	Mar. 25, 2017
Pre-amplifier	HP	8447B	3008A00849	Mar. 26, 2016	Mar. 25, 2017
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 26, 2016	Mar. 25, 2017
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A



Page: 11 of 79

4. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1Test Standard FCC Part 15.207

4.1.2 Test Limit

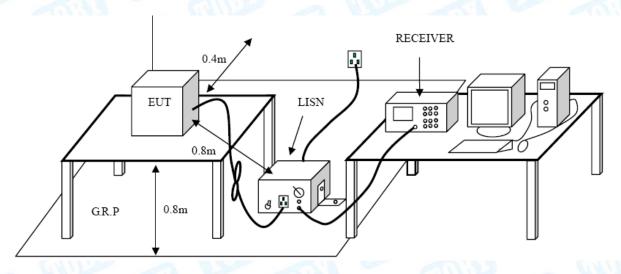
Conducted Emission Test Limit

Fragueney	Maximum RF Line Voltage (dBμV)		
Frequency	Quasi-peak Level	Average Level	
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *	
500kHz~5MHz	56	46	
5MHz~30MHz	60	50	

Notes:

- (1) *Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2 Test Setup



4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.



Page: 12 of 79

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

4.4 EUT Operating Mode

Please refer to the description of test mode.

4.5 Test Data

Please see the next page.



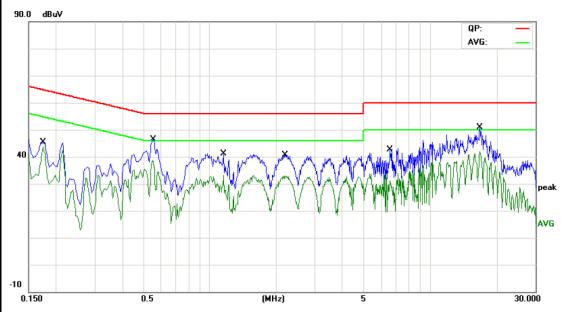
Page: 13 of 79

EUT:	WIFI Card Re	eader N	lodel Name :	WDM-X5		
Temperature:	25 ℃	25 °C Relative Humidity:			55%	
est Voltage:	AC 120V/60H	łz	30	ALL DES		
erminal:	Line	A MAIN		Con-		
Test Mode:	TX B Mode	33		- N	MUL	
Remark:	Only worse c	ase is reported	t	4:72		
90.0 dBuV				QP:		
40				AVG:	pe AV	
0.150 No. Mk.	0.5 Readi Freq. Leve	l Factor	ment Lir	mit Over		
	MHz dBu\			BuV dB	Detector	
1 0).1740 37.8	3 10.12	47 OF 64		\sim	
				.76 -16.81	QP	
).1740 37.2	8 10.12	47.40 54	.76 -7.36	AVG	
3 0	0.5540 34.9	10.12 1 10.02	47.40 54 44.93 56	.76 -7.36 .00 -11.07	AVG QP	
3 0	0.5540 34.9 0.5540 27.3	10.12 1 10.02 5 10.02	47.40 54 44.93 56 37.37 46	.76 -7.36 .00 -11.07 .00 -8.63	AVG QP AVG	
3 C 4 C 5 1	0.5540 34.9 0.5540 27.3 0.5339 28.7	10.12 1 10.02 5 10.02 2 10.11	47.40 54 44.93 56 37.37 46 38.83 56	.76 -7.36 .00 -11.07 .00 -8.63 .00 -17.17	AVG QP AVG	
3 C 4 C 5 1 6 1	0.5540 34.9 0.5540 27.33 0.5339 28.73 0.5339 22.23	10.12 1 10.02 5 10.02 2 10.11 2 10.11	47.40 54 44.93 56 37.37 46 38.83 56 32.33 46	.76 -7.36 .00 -11.07 .00 -8.63 .00 -17.17 .00 -13.67	AVG QP AVG	
3 C 4 C 5 1 6 1	0.5540 34.9 0.5540 27.3 0.5339 28.7	10.12 1 10.02 5 10.02 2 10.11 2 10.11	47.40 54 44.93 56 37.37 46 38.83 56 32.33 46	.76 -7.36 .00 -11.07 .00 -8.63 .00 -17.17	AVG QP AVG	
3 0 4 0 5 1 6 1 7 4	0.5540 34.9 0.5540 27.33 0.5339 28.73 0.5339 22.23	10.12 1 10.02 5 10.02 2 10.11 2 10.11 6 10.06	47.40 54 44.93 56 37.37 46 38.83 56 32.33 46 37.82 56	.76 -7.36 .00 -11.07 .00 -8.63 .00 -17.17 .00 -13.67	AVG QP AVG QP AVG	
3 0 4 0 5 1 6 1 7 4 8 4	0.5540 34.9 0.5540 27.3 0.5339 28.7 0.5339 22.2 0.1579 27.7	10.12 1 10.02 5 10.02 2 10.11 2 10.11 6 10.06 0 10.06	47.40 54 44.93 56 37.37 46 38.83 56 32.33 46 37.82 56 32.56 46	.76 -7.36 .00 -11.07 .00 -8.63 .00 -17.17 .00 -13.67 .00 -18.18	AVG QP AVG	
3 0 4 0 5 1 6 1 7 4 8 4 9 6	0.5540 34.9 0.5540 27.3 0.5339 28.7 0.5339 22.2 0.1579 27.7 0.1579 22.5	10.12 1 10.02 5 10.02 2 10.11 2 10.11 6 10.06 0 10.06 5 10.06	47.40 54 44.93 56 37.37 46 38.83 56 32.33 46 37.82 56 32.56 46 36.81 60	.76 -7.36 .00 -11.07 .00 -8.63 .00 -17.17 .00 -13.67 .00 -18.18 .00 -13.44	AVG QP AVG QP AVG	
3 0 4 0 5 1 6 1 7 4 8 4 9 6	0.5540 34.9 0.5540 27.3 0.5339 28.7 0.5339 22.2 0.1579 27.7 0.1579 22.5 0.5900 26.7	10.12 1 10.02 5 10.02 2 10.11 2 10.11 6 10.06 0 10.06 5 10.06	47.40 54 44.93 56 37.37 46 38.83 56 32.33 46 37.82 56 32.56 46 36.81 60 30.67 50	.76 -7.36 .00 -11.07 .00 -8.63 .00 -17.17 .00 -13.67 .00 -18.18 .00 -13.44 .00 -23.19	AVG QP AVG QP AVG QP	



Page: 14 of 79

EUT:	WIFI Card Reader	Model Name :	WDM-X5			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60Hz	101 T	an is			
Terminal:	Neutral					
Test Mode:	TX B Mode					
Remark:	Only worse case is reported					
90.0 dBuV						



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBu∀	dBu∀	dB	Detector
1		0.1740	34.50	10.12	44.62	64.76	-20.14	QP
2		0.1740	33.74	10.12	43.86	54.76	-10.90	AVG
3		0.5540	35.89	10.02	45.91	56.00	-10.09	QP
4	*	0.5540	28.30	10.02	38.32	46.00	-7.68	AVG
5		1.1539	27.62	10.14	37.76	56.00	-18.24	QP
6		1.1539	22.19	10.14	32.33	46.00	-13.67	AVG
7		2.1900	28.44	10.06	38.50	56.00	-17.50	QP
8		2.1900	22.55	10.06	32.61	46.00	-13.39	AVG
9		6.5900	28.03	10.06	38.09	60.00	-21.91	QP
10		6.5900	20.84	10.06	30.90	50.00	-19.10	AVG
11		16.8260	36.57	10.06	46.63	60.00	-13.37	QP
12		16.8260	31.99	10.06	42.05	50.00	-7.95	AVG

^{*:}Maximum data x:Over limit !:over margin



Page: 15 of 79

EUT:	WIFI	Card Reade	r M c	del Name :	V	VDM-X5	
Temperature	e: 25 °C		Re	lative Humid	lity: 5	55%	River
Test Voltage	e: AC 2	40V/60Hz		1	(Till	11:33	
Terminal:	Line		ARIL		N.		
Test Mode:	TX B	Mode		CALIFOR	7	$\sim V$	N. C.
Remark:	Only	worse case i	s reported	The second second		13	
80.0 dBuV							
××						QP: AVG:	
30		Mary Mary Mary Mary Mary Mary Mary Mary	***************************************		MANN	and the second second	peak
-20 0.150	0.5		(MHz)	5			30.000
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	0.1740	37.31	9.97	47.28	64.76	-17.48	QP
2 *	0.1740	36.79	9.97	46.76	54.76	-8.00	AVG
3	0.2140	36.43	10.02	46.45		-16.59	QP
4	0.2140	32.83	10.02	42.85		-10.19	AVG
5	0.5500	34.25	10.04	44.29		-11.71	QP
6	0.5500	27.14	10.04	37.18	46.00		AVG
7	0.9780	29.17	10.06	39.23		-16.77	QP
8	0.9780	21.72	10.06	31.78		-14.22	AVG
9	2.1860	27.70	10.05	37.75		-18.25	QP
10	2.1860	22.36	10.05	32.41	40.00	-13.59	AVG

*:Maximum data x:Over limit !:over margin

4.6540

4.6540

11

12

Emission Level= Read Level+ Correct Factor

25.48

21.94

9.97

9.97

35.45

31.91

QP

AVG

56.00 -20.55

46.00 -14.09



Page: 16 of 79

EUT:		WIFI	Card Reade	er Mc	del Name :	1	WDM-X5	
Tempe	rature:	: 25 °C		Re	lative Humid	dity:	55%	Alle
Test Vo	oltage:	AC 2	40V/60Hz		1	67	EE!	
Termin	nal:	Neut	ral	Chir		1 6		
Test M	ode:	TX B	Mode			7	a Y	
Remar	k:	Only	worse case	is reported			13	
80.0 dB	A A		Ma Cana M		\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Wh.	QP: AVG:	
-20 0.150		0.5		(MHz)	5	MANA	Whomen	AVG
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB	dBu∨	dBuV	dB	Detector
1		0.1740	33.87	10.12	43.99		-20.77	QP
2		0.1740	33.13	10.12	43.25		-11.51	AVG
3		0.5500	35.16	10.02	45.18		-10.82	QP
4	*	0.5500	28.11	10.02	38.13		-7.87	AVG
5		0.9780	28.47	10.15	38.62	56.00	-17.38	QP
6		0.9780	20.92	10.15	31.07	46.00	-14.93	AVG
7		2.1900	28.36	10.06	38.42	56.00	-17.58	QP
8		2.1900	22.53	10.06	32.59	46.00	-13.41	AVG
9		4.7140	24.96	10.06	35.02	56.00	-20.98	QP
10		4.7140	21.27	10.06	31.33	46.00	-14.67	AVG
11	2	23.0580	18.73	10.06	28.79	60.00	-31.21	QP

*:Maximum data x:Over limit !:over margin

23.0580

12

Emission Level= Read Level+ Correct Factor

6.52

10.06

16.58

AVG

50.00 -33.42



Page: 17 of 79

5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard FCC Part 15.209

5.1.2 Test Limit

Radiated Emission Limits (9kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Radiated Emission Limit (Above 1000MHz)

Frequency	Class A (dBuV	/m)(at 3 M)	Class B (dBuV	/m)(at 3 M)
(MHz)	Peak Average		Peak	Average
Above 1000	80	60	74	54

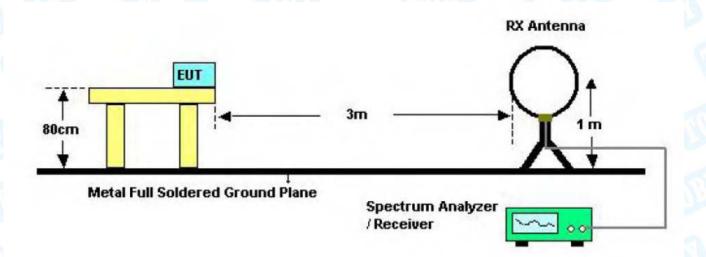
Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

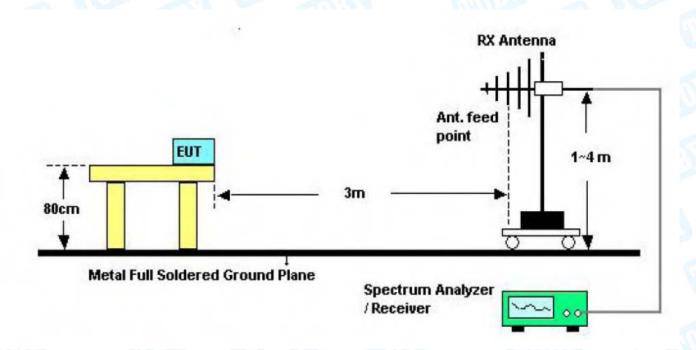


Page: 18 of 79

5.2 Test Setup



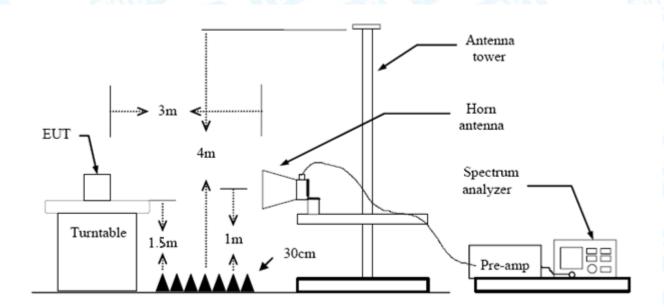
Below 30MHz Test Setup



Below 1000MHz Test Setup



Page: 19 of 79



Above 1GHz Test Setup

5.3 Test Procedure

- (1) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (5) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (6) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (7) For the actual test configuration, please see the test setup photo.

5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.



Page: 20 of 79

5.5 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Test data please refer the following pages.



Page: 21 of 79

EUT:		VVII	I Card Read	ler M	odel:		WDM-X5	
Tempera	ature:	25	$^{\circ}$ C	R	elative Humi	dity:	55%	
Test Vol	tage:	DC	3.7V		81	67	MASS	
Ant. Pol		Hor	izontal	ARGE		1 6		Till
Test Mo	de:	TX	B Mode 2412	2MHz	CHID)	2		A STATE OF THE PARTY OF THE PAR
Remark:	:	Onl	y worse case	e is reported	V Comment	CIII)	:33	_ (
80.0 dBu	V/m							
30	1	×	A september 1	Ž VMMMMMMM	He All Mandaland	(RF)FC	C 15C 3M Radiation Margin -6 5 X 6 X	
\w\	WW.	May Marke	alah dalah karangan d					
30.000			70 80	(MHz)	300 Measure-	400	500 600 700	1000.00
	40 5			(MHz) Correct Factor	Measure- ment	400 Limit		1000.00
30.000	40 5 VIk. I	60 60	70 80 Reading	Correct	Measure-		Over	
30.000	40 5 VIk. I	60 60 Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over m dB	Detecto
30.000 No. N	40 5 Mk. I	Freq.	Reading Level dBuV 49.25	Correct Factor	Measure- ment dBuV/m	Limit dBuV/	Over m dB 0 -15.28	Detecto
No. No. 1	40 5 Mk. I 59	Freq. MHz .8588	Reading Level dBuV 49.25 61.10	Correct Factor dB/m -24.53 -22.50	Measure- ment dBuV/m 24.72 38.60	Limit dBuV/ 40.0 43.5	Over m dB 0 -15.28 0 -4.90	Detector peal
No.	40 5 Mk. I 59 119	Freq. MHz .8588 9.8555 7.6904	Reading Level dBuV 49.25 61.10 59.44	Correct Factor dB/m -24.53 -22.50 -19.18	Measure- ment dBuV/m 24.72 38.60 40.26	Limit dBuV/ 40.0 43.5 46.0	Over m dB 0 -15.28 0 -4.90 0 -5.74	Detector peal peal peal
No.	40 5 Mk. I 59 119 227 420	Freq. MHz .8588 9.8555 7.6904 0.5803	Reading Level dBuV 49.25 61.10 59.44 48.19	Correct Factor dB/m -24.53 -22.50 -19.18 -12.90	Measure- ment dBuV/m 24.72 38.60 40.26 35.29	Limit dBuV/ 40.0 43.5 46.0 46.0	Over m dB 0 -15.28 0 -4.90 0 -5.74 0 -10.71	Detector peal peal peal peal
No. M	40 5 Mk. I 59 119 227 420 480	Freq. MHz .8588 9.8555 7.6904	Reading Level dBuV 49.25 61.10 59.44 48.19 48.70	Correct Factor dB/m -24.53 -22.50 -19.18	Measure- ment dBuV/m 24.72 38.60 40.26	Limit dBuV/ 40.0 43.5 46.0	Over m dB 0 -15.28 0 -4.90 0 -5.74 0 -10.71 0 -8.92	Detector peal peal peal peal peal



Page: 22 of 79

EUT:	WIFI Card Reade	er Model:		WDM-X5	
Temperature:	25 ℃	Relative	e Humidity:	55%	
Test Voltage:	DC 3.7V				
Ant. Pol.	Vertical	A ROLL		200	
Test Mode:	TX B Mode 2412	MHz	III	A W	A Line
Remark:	Only worse case	is reported	611	133	
80.0 dBuV/m					
30 1 X	3 2 X		(RF)FI	CC 15C 3M Radiatic Margin -	
	liffication retention that the latest and the consenses to		Mary broken to be a	A maken garden de	on history that he
20 30.000 40 50		(MHz)	300 400	500 600 700	1000.00
30.000 40 50 No. Mk. F	Reading Freq. Level	(MHz) Correct Mea Factor me	300 400 sure-	Over	
No. Mk. F	Reading Level MHz dBuV	Correct Mea Factor me	300 400 sure- ent Limit	Over m dB	Detector
No. Mk. F	Reading Level WHz dBuV 1550 45.67	Correct Mea Factor me dB/m dBu -18.39 27	300 400 sure- ent Limit JV/m dBuV/r 2.28 40.00	Over dB -12.72	Detector peak
No. Mk. F 1 37. 2 59.	Reading Level MHz dBuV	Correct Mea Factor me dB/m dBu -18.39 27	300 400 sure- ent Limit	Over dB -12.72	Detector
No. Mk. F	Reading Level WHz dBuV 1550 45.67	Correct Mea Factor me dB/m dBu -18.39 27 -24.53 31	300 400 sure- ent Limit JV/m dBuV/r 2.28 40.00	Over m dB 0 -12.72 0 -8.99	Detector peak
No. Mk. F 1 37. 2 59. 3 * 119	Reading Level MHz dBuV 1550 45.67 8588 55.54	Correct Mea Factor me dB/m dBu -18.39 27 -24.53 31 -22.50 36	300 400 sure- ent Limit JV/m dBuV/r 2.28 40.00 .01 40.00	Over m dB 0 -12.72 0 -8.99 0 -7.41	Detector peak peak
No. Mk. F 1 37. 2 59. 3 * 119 4 234	Reading Level MHz dBuV 1550 45.67 8588 55.54 .8556 58.59	Correct Mea Factor me dB/m dBu -18.39 27 -24.53 31 -22.50 36 -18.84 37	300 400 sure- ent Limit 1.28 40.00 1.01 40.00 1.09 43.50	Over m dB 0 -12.72 0 -8.99 0 -7.41 0 -8.12	Detector peak peak peak

*:Maximum data x:Over limit !:over margin



Page: 23 of 79

EUT:	WIFI Card Read	er Me	odel:	WDM-X5	
Temperature:	25 ℃	Re	elative Humidity:	55%	
Test Voltage:	DC 3.7V		11		
Ant. Pol.	Horizontal	P. P. ROTE			Ø.
Test Mode:	TX B Mode 2437	7MHz			
Remark:	Only worse case	e is reported		7:13	- 1
80.0 dBuV/m					_
-20	IL N. S. J. C. S.	2 X	(RI	FJFCC 15C 3M Radiation Margin -6 dB 5 6 X	
30.000 40 50	60 70 80	(MHz)	300 40	0 500 600 700 10	00.000
No. Mk.	Reading Freq. Level	Correct Factor	Measure- ment Lin	nit Over	
- 1	MHz dBuV	dB/m	dBuV/m dBu	uV/m dB Def	tecto
1 119	0.8555 59.53	-22.50	37.03 43	3.50 -6.47 p	eak
2 191	.7450 52.72	-20.81	31.91 43	3.50 -11.59 p	eak
3 ! 236	5.6447 59.23	-18.75	40.48 46	6.00 -5.52 p	eak
4 * 360).4476 56.50	-14.55	41.95 46	6.00 -4.05 p	eak
5 480).5276 51.43	-11.62		<u>-</u>	eak
).4002 46.63	-6.38		<u>'</u>	eak
*:Maximum data x	::Over limit !:over margin	_			



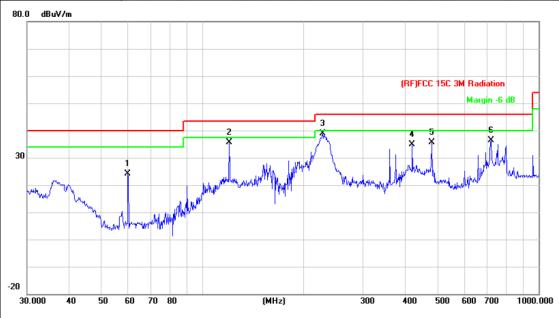
Page: 24 of 79

Relative Humidity: 55%
(RF)FCC 15C 3M Radiation Margin -6 dB (MHz) 300 400 500 600 700 1000.000
(RF)FCC 15C 3M Radiation Margin 6 dB (MHz) 300 400 500 600 700 1000.000
(RF)FCC 15C 3M Radiation Margin -6 dB (MHz) 300 400 500 600 700 1000.000
(MHz) 300 400 500 600 700 1000.000
(MHz) 300 400 500 600 700 1000.000
(MHz) 300 400 500 600 700 1000.000
Correct Measure-
Correct Measure-
Factor ment Limit Over
dB/m dBuV/m dBuV/m dB Detector
20.88 33.44 40.00 -6.56 peak
23.56 31.19 40.00 -8.81 peak
22.50 34.29 43.50 -9.21 peak
19.11 37.13 46.00 -8.87 peak
14.55 37.61 46.00 -8.39 peak
10.13 38.23 46.00 -7.77 peak
2



Page: 25 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5					
Temperature:	25 ℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	(3)						
Ant. Pol.	Horizontal	Horizontal						
Test Mode:	TX B Mode 2462MHz							
Remark:	Only worse case is repor	ted	1:33 _ 0					



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		59.8588	48.75	-24.53	24.22	40.00	-15.78	peak
2		119.8555	58.10	-22.50	35.60	43.50	-7.90	peak
3	*	227.6904	57.94	-19.18	38.76	46.00	-7.24	peak
4		420.5803	47.70	-12.91	34.79	46.00	-11.21	peak
5		480.5276	47.20	-11.62	35.58	46.00	-10.42	peak
6		721.7259	43.48	-7.10	36.38	46.00	-9.62	peak

^{*:}Maximum data x:Over limit !:over margin



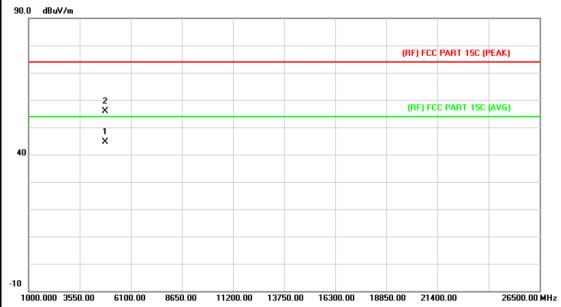
Page: 26 of 79

EUT:	WIFI Card Reader	Model:	WE	DM-X5	13
Temperature:	25 ℃	Relative Humic	dity: 55%	%	
Test Voltage:	DC 3.7V		The		A.
Ant. Pol.	Vertical	MULL	100		B
Test Mode:	TX B Mode 2462MHz			A FIRM	
Remark:	Only worse case is re	eported		3	1
80.0 dBuV/m					1
30	2	3	(RF)FCC 15C	3M Radiation Margin -6 dB 5 6 X X	
-20 30.000 40 50	60 70 80	(MHz) 300	400 500	500 700 1000	.000
-20	60 70 80		400 500	600 700 1000	.000
-20	60 70 80 Reading Co	(MHz) 300 prrect Measure- actor ment	400 500 Limit	600 700 1000 Over	
-20 30.000 40 50	Reading Co	orrect Measure-			
-20 30.000 40 50 No. Mk. Fre	Reading Co eq. Level F	orrect Measure- actor ment	Limit	Over dB Dete	
-20 30.000 40 50 No. Mk. Fre	Reading Co eq. Level F dbuV d 588 54.04 -2	orrect Measure- actor ment B/m dBuV/m	Limit dBuV/m	Over dB Dete	ctor ak
No. Mk. Fre	Reading Codeq. Level For dBuV dbuV 588 54.04 -24 555 58.59 -2	orrect Measure- actor ment B/m dBuV/m 4.53 29.51	Limit dBuV/m 40.00	Over dB Dete -10.49 pe -7.41 pe	ector ak ak
No. Mk. Fre	Reading Codeq. Level For dBuV dept. 588 54.04 -24 555 58.59 -2 192 56.64 -1	ment Measure- ment dBuV/m 4.53 29.51 2.50 36.09	Limit dBuV/m 40.00 43.50	Over dB Dete -10.49 pe -7.41 pe -8.69 pe	eak eak
No. Mk. Free MH 1 59.85 2 * 119.8 3 224.5	Reading Codeq. Level For dBuV dept. 588 54.04 -24 555 58.59 -2 6192 56.64 -19 618 618 618 618 618 618 618 618 618 618	Measure- ment B/m dBuV/m 4.53 29.51 2.50 36.09 9.33 37.31	Limit dBuV/m 40.00 43.50 46.00	Over dB Dete -10.49 pe -7.41 pe -8.69 pe -14.96 pe	ctor



Page: 27 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V		ans a		
Ant. Pol.	Horizontal				
Test Mode:	TX B Mode 2412MHz				
Remark:	No report for the emission which more than 10 dB below the				
	prescribed limit.				

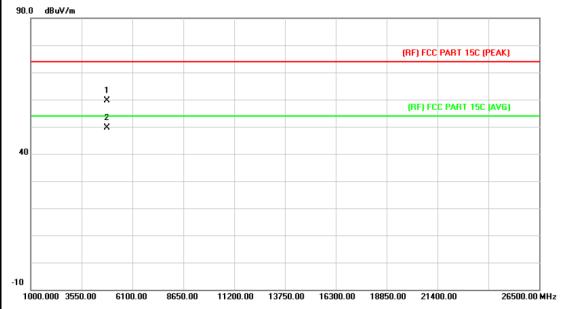


N	lo.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		*	4823.589		13.56	44.65	54.00	-9.35	AVG
2			4823.976	42.27	13.56	55.83	74.00	-18.17	peak



Page: 28 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V	(A)	THE STATE OF THE S			
Ant. Pol.	Vertical	U. C.				
Test Mode:	TX B Mode 2412MHz					
Remark:	No report for the emission which more than 10 dB below the prescribed limit.					

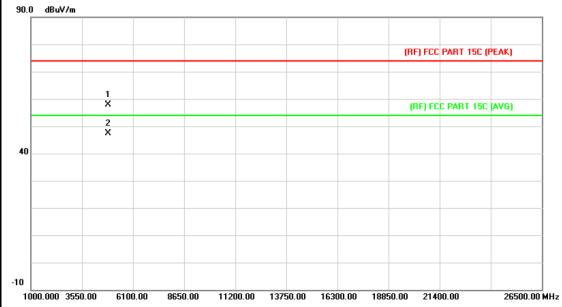


No	. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.826	46.08	13.56	59.64	74.00	-14.36	peak
2	*	4823.973	36.09	13.56	49.65	54.00	-4.35	AVG



Page: 29 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V				
Ant. Pol.	Horizontal				
Test Mode:	TX B Mode 2437MHz				
Remark:	No report for the emission which more than 10 dB below the				
	prescribed limit.				

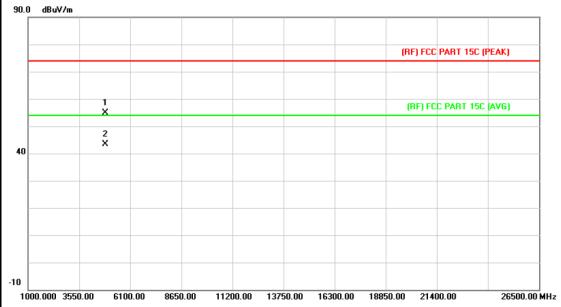


No	. Mk.	Freq.			Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.943	44.09	13.86	57.95	74.00	-16.05	peak
2	*	4873.952	33.43	13.86	47.29	54.00	-6.71	AVG



Page: 30 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V	101 - C	
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2437MHz		
Remark:	No report for the emission	n which more than 10 o	dB below the
	prescribed limit.		

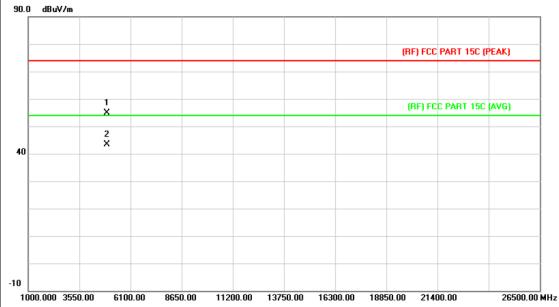


	No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1			4873.364	41.01	13.86	54.87	74.00	-19.13	peak
2		*	4873.964	29.58	13.86	43.44	54.00	-10.56	AVG



Page: 31 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V	(C)				
Ant. Pol.	Horizontal					
Test Mode:	TX B Mode 2462MHz					
Remark:	No report for the emission	No report for the emission which more than 10 dB below the				
	prescribed limit.					
i						

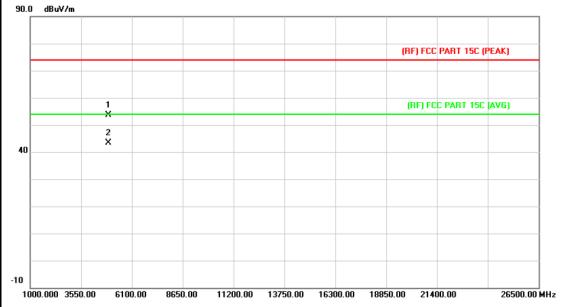


No	. Mk	Freq.	_		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4923.739	40.64	14.15	54.79	74.00	-19.21	peak
2	*	4925.497	29.28	14.16	43.44	54.00	-10.56	AVG



Page: 32 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V				
Ant. Pol.	Vertical				
Test Mode:	TX B Mode 2462MHz				
Remark:	No report for the emission which more than 10 dB below the				
	prescribed limit.				

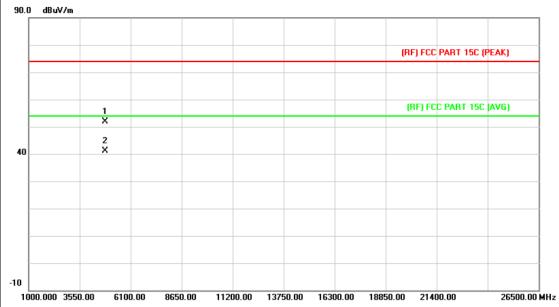


N	o. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4922.824	39.53	14.14	53.67	74.00	-20.33	peak
2	*	4923.811	29.30	14.15	43.45	54.00	-10.55	AVG



Page: 33 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V						
Ant. Pol.	Horizontal	Horizontal					
Test Mode:	TX G Mode 2412MHz						
Remark:	No report for the emission which more than 10 dB below the						
prescribed limit.							

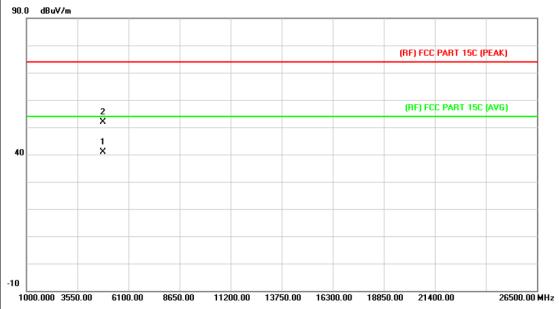


No.	Mk.	Freq.	_		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.565	38.24	13.56	51.80	74.00	-22.20	peak
2	*	4823.616	27.46	13.56	41.02	54.00	-12.98	AVG



Page: 34 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Vertical	Vertical					
Test Mode:	TX G Mode 2412MHz						
Remark:	No report for the emission which more than 10 dB below the						
prescribed limit.							

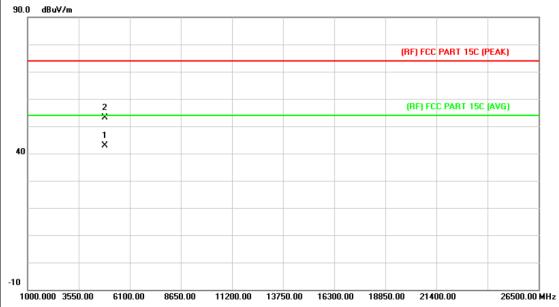


No.	. Mk.	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4822.986	27.32	13.55	40.87	74.00	-33.13	peak
2	*	4823.988	38.31	13.56	51.87	54.00	-2.13	AVG



Page: 35 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V						
Ant. Pol.	Horizontal	Horizontal					
Test Mode:	TX G Mode 2437MHz						
Remark:	No report for the emission which more than 10 dB below the						
prescribed limit.							
i							

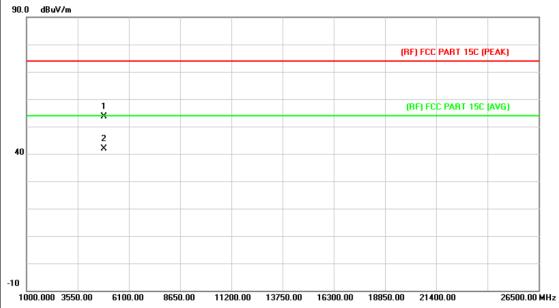


No.	. Mk	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4873.319	28.96	13.86	42.82	54.00	-11.18	AVG
2		4875.290	39.17	13.87	53.04	74.00	-20.96	peak



Page: 36 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Vertical	Vertical					
Test Mode:	TX G Mode 2437MHz						
Remark:	No report for the emission which more than 10 dB below the						
	prescribed limit.						

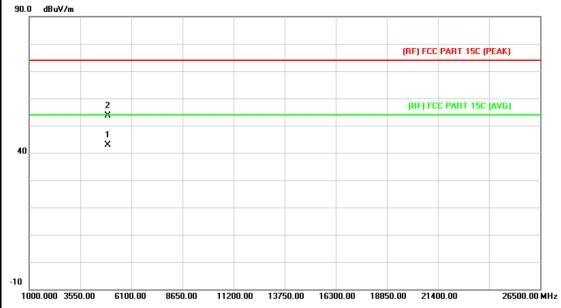


No	. Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4874.075	39.74	13.86	53.60	74.00	-20.40	peak
2	*	4874.999	28.14	13.86	42.00	54.00	-12.00	AVG



Page: 37 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V	01 - 0			
Ant. Pol.	Horizontal				
Test Mode:	TX G Mode 2462MHz		THE PARTY OF THE P		
Remark:	No report for the emissio prescribed limit.	n which more than 10 c	dB below the		

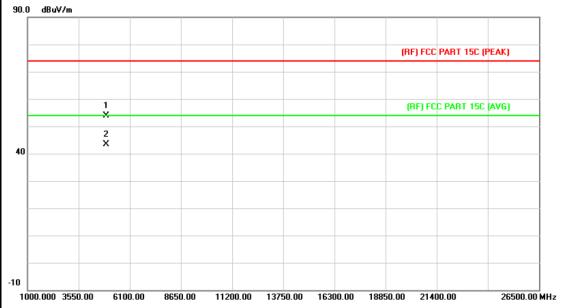


No	o. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4922.551	28.79	14.14	42.93	54.00	-11.07	AVG
2		4924.879	39.51	14.15	53.66	74.00	-20.34	peak



Page: 38 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V	DC 3.7V				
Ant. Pol.	Vertical	Vertical				
Test Mode:	TX G Mode 2462MHz					
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.	لا مرس				
i e						

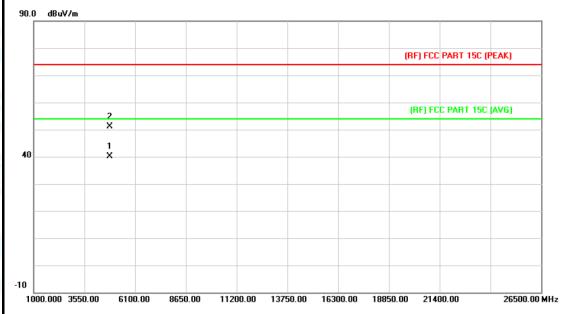


No	o. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4924.720	39.66	14.15	53.81	54.00	-0.19	AVG
2		4924.909	29.32	14.15	43.47	74.00	-30.53	peak



Page: 39 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V				
Ant. Pol.	Horizontal	Horizontal			
Test Mode:	TX N(HT20) Mode 2412N	ИНz			
Remark:	No report for the emission which more than 10 dB below the				
	prescribed limit.				

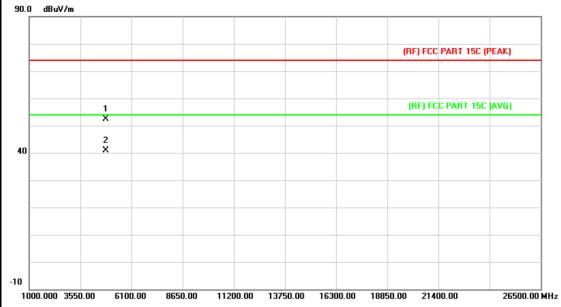


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4824.135	26.65	13.56	40.21	54.00	-13.79	AVG
2		4824.687	37.68	13.56	51.24	74.00	-22.76	peak



Page: 40 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V	DC 3.7V				
Ant. Pol.	Vertical	Vertical				
Test Mode:	TX N(HT20) Mode 2412	MHz				
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.					

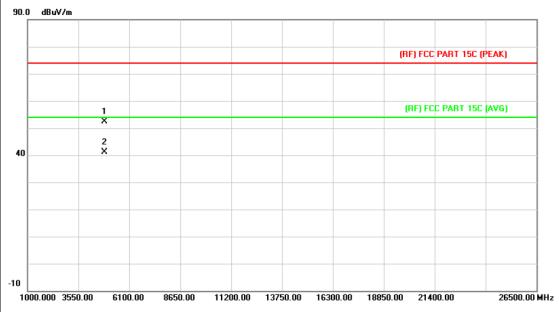


1	No. M	lk. Freq.			Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4823.918	38.88	13.56	52.44	74.00	-21.56	peak
2	*	4824.861	27.23	13.56	40.79	54.00	-13.21	AVG



Page: 41 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V	(3) T			
Ant. Pol.	Horizontal	Horizontal			
Test Mode:	TX N(HT20) Mode 2437N	ИНz			
Remark:	No report for the emission which more than 10 dB below the				
	prescribed limit.				

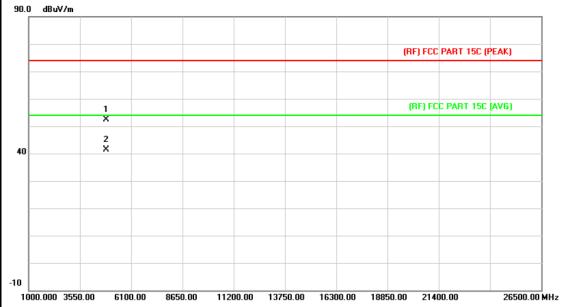


No	. Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4874.204	38.57	13.86	52.43	74.00	-21.57	peak
2	*	4874.330	27.22	13.86	41.08	54.00	-12.92	AVG



Page: 42 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V				
Ant. Pol.	Vertical	Vertical			
Test Mode:	TX N(HT20) Mode 2437	ИHz			
Remark:	No report for the emission which more than 10 dB below the				
	prescribed limit.				

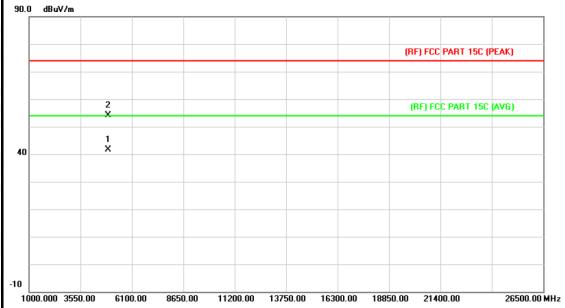


No	. Mk	. Freq.	_		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4873.424	38.54	13.86	52.40	74.00	-21.60	peak
2	*	4874.354	27.47	13.86	41.33	54.00	-12.67	AVG



Page: 43 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V	01 -	THE STATE OF THE S
Ant. Pol.	Horizontal		
Test Mode:	TX N(HT20) Mode 2462N	ИНz	
Remark:	No report for the emission	n which more than 10	dB below the
	prescribed limit.	N 10	

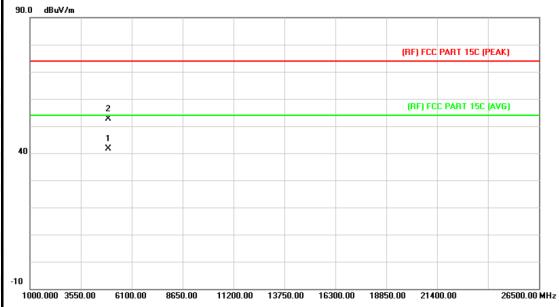


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4923.061	27.48	14.15	41.63	54.00	-12.37	AVG
2		4923.583	39.91	14.15	54.06	74.00	-19.94	peak



Page: 44 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V	01 - 0	miss a
Ant. Pol.	Vertical		
Test Mode:	TX N(HT20) Mode 2462N	ЛНz	A VIVE
Remark:	No report for the emissio prescribed limit.	n which more than 10 o	dB below the



N	lo. N	Лk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*		4924.243	27.46	14.15	41.61	54.00	-12.39	AVG
2			4924.447	38.41	14.15	52.56	74.00	-21.44	peak



Page: 45 of 79

6. Restricted Bands Requirement

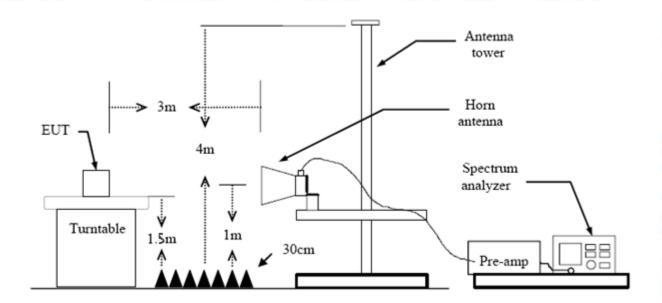
6.1 Test Standard and Limit

6.1.1 Test Standard FCC Part 15.209 FCC Part 15.205

6.1.2 Test Limit

Restricted Frequency	Class B (dB	suV/m)(at 3 M)
Band (MHz)	Peak	Average
2310 ~2390	74	54
2483.5 ~2500	74	54

6.2 Test Setup



6.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.



Page: 46 of 79

(4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

6.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

6.5 Test Data

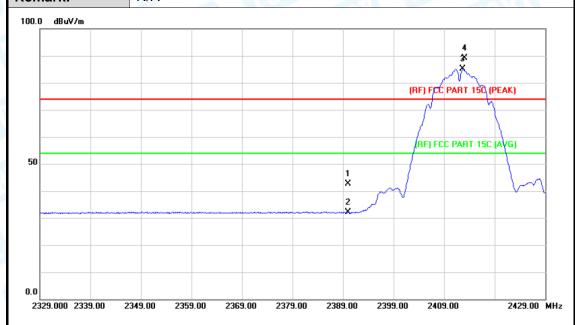
Please see the next page.



Page: 47 of 79

(1) Radiation Test

EUT:	WIFI Card Reader	Model:	WDM-X5
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2412MHz		(:) (:)
Remark:	N/A		

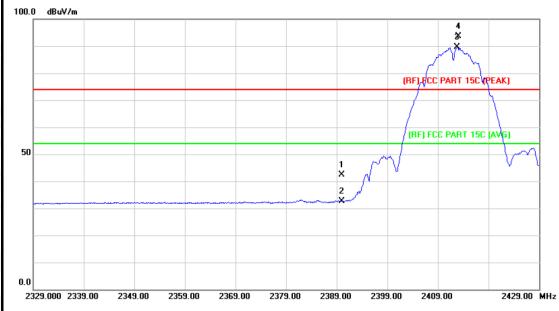


No	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	41.81	0.77	42.58	74.00	-31.42	peak
2		2390.000	31.27	0.77	32.04	54.00	-21.96	AVG
3	*	2412.700	84.24	0.86	85.10	Fundamental	Frequency	AVG
4	Χ	2413.100	88.32	0.86	89.18	Fundamental	Frequency	peak



Page: 48 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		anis s
Ant. Pol.	Vertical		
Test Mode:	TX B Mode 2412MHz		THE REAL PROPERTY OF THE PARTY
Remark:	N/A	51	1:33
100.0 dBuV/m			
			4 %

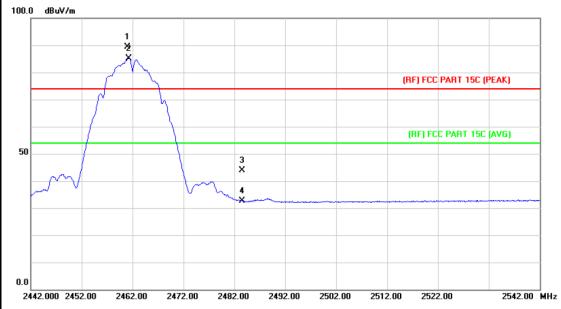


No.	Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	41.68	0.77	42.45	74.00	-31.55	peak
2		2390.000	31.91	0.77	32.68	54.00	-21.32	AVG
3	*	2412.800	88.69	0.86	89.55	Fundamenta	Frequency	AVG
4	X	2413.000	92.82	0.86	93.68	Fundamental	Frequency	peak



Page: 49 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX B Mode 2462MHz	THE PERSON NAMED IN	
Remark:	N/A		1:32
100.0 dBuV/m			



No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Χ	2461.000	88.27	1.06	89.33	Fundamental	Frequency	peak
2	*	2461.300	84.13	1.07	85.20	Fundamenta	l Frequency	AVG
3		2483.500	42.82	1.17	43.99	74.00	-30.01	peak
4		2483.500	31.48	1.17	32.65	54.00	-21.35	AVG



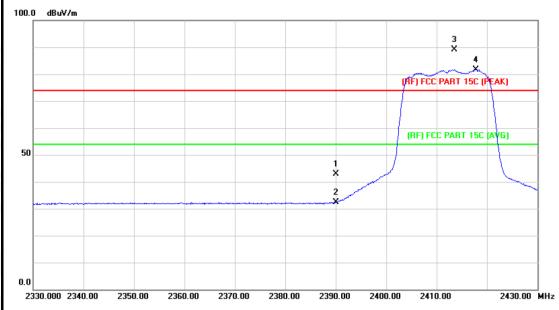
Page: 50 of 79

UT:			WIFI	Car	d Read	ler	Mo	odel:			WI	DM-X5		
Tempe	ratur	e:	25 °C	C		33	Re	lativ	e Hum	idity:	55	%		b
Test Vo	oltag	e:	DC 3	3.7V	Am					16		133		A.
Ant. Po	ol.		Verti	cal		11				1				
Test M	ode:		TX B	Мо	de 246	2MHz		6	1110			1 11/1	N. Bar	
Remar	k:		N/A	W		1	63	Į V		6.11		3		1
100.0 dl	BuV/m													
50	~~\		1 ½ ½ ½ ½ ½		ν -ν _ν	3 X 4						ART 15C (PEAK		
1											2522.00	0 2	2542.00	_ MI
	00 2452	2.00 24	162.00	2472	.00 24	B2.00 245	92.00	2502	.00 25	12.00	LULL.U			
0.0 2442.00	00 2452	2.00 24	162.00							12.00				
2442.00	00 2452 Mk.			Re	eading		ect	Mea	sure-	Lim		Over		
2442.00			eq.	Re L	ading	Corre	ect tor	Mea m	sure-		it	Over	Dete	cto
2442.00	Mk.	Fre	eq.	Re	eading evel	Corre Fact	ect tor	Mea m	sure- ent	Lim	it V/m		Dete	
2442.00	Mk.	Fre	eq. Iz 900	Re L	eading evel dBuV	Corre Fact	ect tor	Mea m dB	asure- ent uV/m	Lim dBu'	it V/m mental	dB	ре	eal
No.	Mk.	Fre MH 2460.	eq. dz 900 300	Re L	eading evel dBuV 1.62	Corre Fact dB/m	ect tor	Mea m dB	asure- ent uV/m 2.68	Lim dBu'	it V/m mental	dB Frequency	pe A\	eal VC



Page: 51 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2412MHz		
Remark:	N/A		1:33



No.	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	42.04	0.77	42.81	74.00	-31.19	peak
2		2390.000	31.70	0.77	32.47	54.00	-21.53	AVG
3	X	2413.500	88.23	0.86	89.09	Fundamenta	l Frequency	peak
4	*	2417.800	80.86	0.89	81.75	Fundamenta	I Frequency	AVG



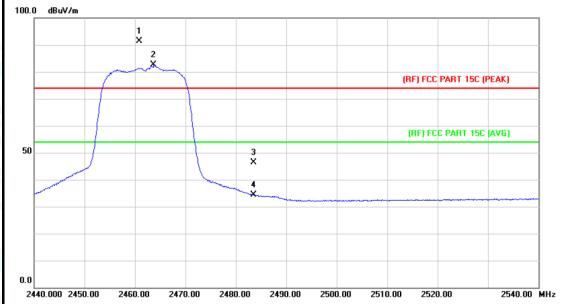
Page: 52 of 79

UT:	JT: WIFI Card Rea		Card Rea	der	Mc	del:		W	WDM-X5			
Гет	peratu	re:	25 °	C	(A)	Re	lative I	Humidit	y: 55	55%		
Test	Voltag	e:	DC 3	3.7V		500				133		
۹nt.	Pol.		Vertical									
Test	Mode:		TX	Mode 24	12MHz		CILL	100		2 11	N. Control	
Rem	ark:		N/A	Marie	A	177	160	6		13		
00.0	dBuV/m											
										4		
										3 X		
									(RF) FCC P	ART 15C (PEAK	<u></u>	
									(RF) FCC	PART 15C (AVE	i)	
50							1 X	- 1		1		
							2	and water and a second			Marin	
-		<u> </u>		 								
0.0	0.000 2340	0.00 23	50.00	2360.00 23	370.00 23	380.00	2390.00	2400.00	2410.0	00 2	430.00 MH	
				Reading	Corr	ect	Measi	Iro-				
N	o. Mk.	Fre	ea.	Level	Fac		mer		_imit	Over		
		MH		dBuV	dB/ı		dBuV		dBuV/m	dB	Detecto	
1		2390.	000	43.29	0.7	7	44.0	06	74.00	-29.94	peak	
2		2390.	000	31.62	0.7	7	32.3	39	54.00	-21.61	AVG	
3	*	2413.	000	82.50	0.8	6	83.3	36 F	undamenta	al Frequency	AVG	
	X	2418.	400	88.15	0.8		89.0	<u> </u>	undamenta	al Frequency	peak	
4	Х	7/17 2	/IIIIII	88 15	018		XU I	1/1	undamenta	al Frequency	nea	



Page: 53 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		
Test Mode:	TX G Mode 2462MHz		
Remark:	N/A		1:13 _ (1)

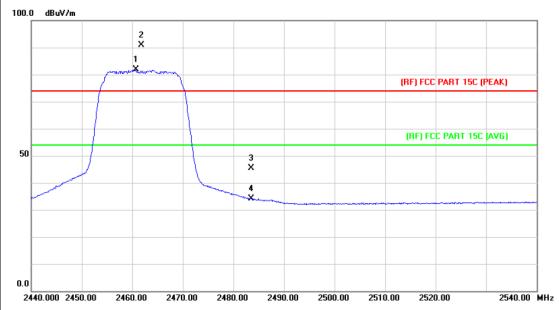


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2460.900	90.27	1.06	91.33	Fundamenta	I Frequency	peak
2	*	2463.700	81.54	1.08	82.62	Fundamenta	al Frequency	AVG
3		2483.500	45.33	1.17	46.50	74.00	-27.50	peak
4		2483.500	33.17	1.17	34.34	54.00	-19.66	AVG



Page: 54 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V						
Ant. Pol.	Vertical						
Test Mode:	TX G Mode 2462MHz						
Remark:	N/A		1:33 _ 0				

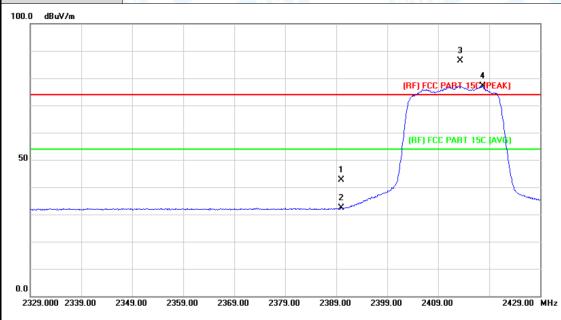


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2460.700	80.76	1.06	81.82	Fundamental	Frequency	AVG
2	X	2461.800	89.73	1.07	90.80	Fundamental	Frequency	peak
3		2483.500	44.18	1.17	45.35	74.00	-28.65	peak
4		2483.500	32.95	1.17	34.12	54.00	-19.88	AVG



Page: 55 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5					
Temperature:	25 ℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	DC 3.7V						
Ant. Pol.	Horizontal							
Test Mode:	TX N(HT20) Mode 2412	TX N(HT20) Mode 2412MHz						
Remark:	N/A		1:33					
	•							

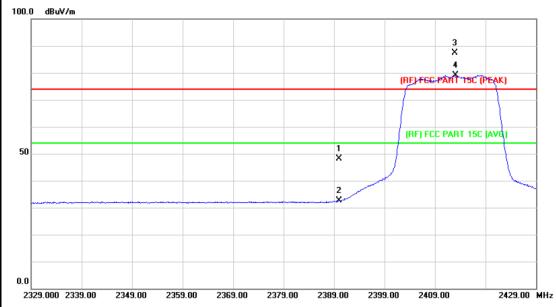


N	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	41.93	0.77	42.70	74.00	-31.30	peak
2		2390.000	31.64	0.77	32.41	54.00	-21.59	AVG
3	X	2413.300	85.48	0.86	86.34	Fundamenta	I Frequency	peak
4	*	2417.700	76.17	0.89	77.06	Fundamenta	I Frequency	AVG



Page: 56 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5					
Temperature:	25 ℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	DC 3.7V						
Ant. Pol.	Vertical							
Test Mode:	TX N(HT20) Mode 2412N	TX N(HT20) Mode 2412MHz						
Remark:	N/A							

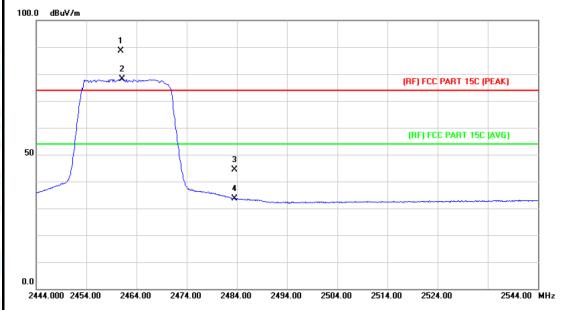


No.	Mk	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	47.32	0.77	48.09	74.00	-25.91	peak
2		2390.000	31.83	0.77	32.60	54.00	-21.40	AVG
3	Χ	2412.900	86.50	0.86	87.36	Fundamental	Frequency	peak
4	*	2413.000	78.30	0.86	79.16	Fundamental	Frequency	AVG



Page: 57 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5				
Temperature:	25 ℃ Relative Humidity: 55%						
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Horizontal						
Test Mode:	TX N(HT20) Mode 2462N	TX N(HT20) Mode 2462MHz					
Remark:	N/A						

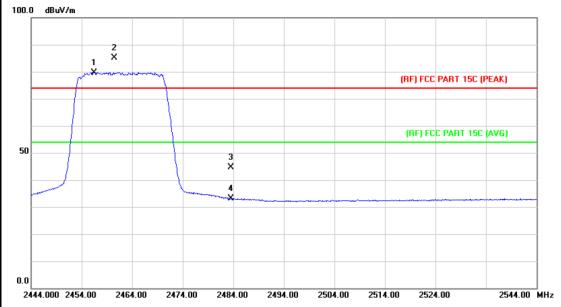


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Χ	2460.800	87.65	1.06	88.71	Fundamenta	l Frequency	peak
2	*	2461.100	77.11	1.06	78.17	Fundamenta	l Frequency	AVG
3		2483.500	43.30	1.17	44.47	74.00	-29.53	peak
4		2483.500	32.54	1.17	33.71	54.00	-20.29	AVG



Page: 58 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V				
Ant. Pol.	Vertical				
Test Mode:	TX N(HT20) Mode 2462MHz				
Remark:	N/A		1:33		



N	o. Mł	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2456.500	78.70	1.05	79.75	Fundamental	Frequency	AVG
2	X	2460.500	83.99	1.06	85.05	Fundamental	Frequency	peak
3		2483.500	43.45	1.17	44.62	74.00	-29.38	peak
4		2483.500	32.04	1.17	33.21	54.00	-20.79	AVG

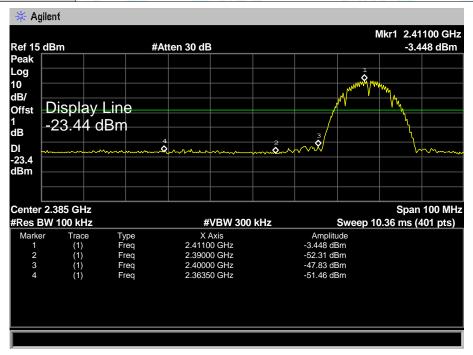


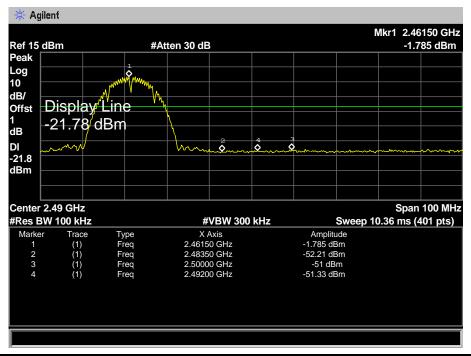


Page: 59 of 79

(2) Conducted Test

EUT:	WIFI Card Reader	Model:	WDM-X5		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V				
Test Mode:	TX B Mode 2412MHz / TX B Mode 2462MHz				
Remark:	The EUT is programed in continuously transmitting mode				



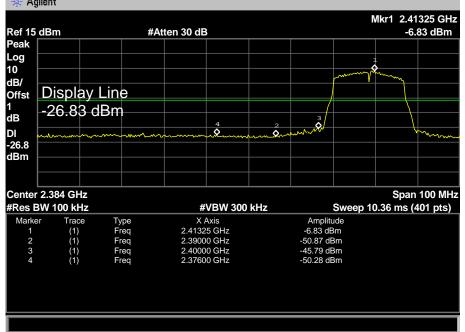


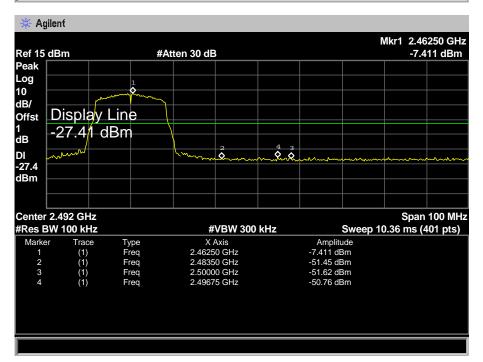




Page: 60 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5	
Temperature:	25 ℃	Relative Humidity:	55%	
Test Voltage:	DC 3.7V		miss a	
Test Mode:	TX G Mode 2412MHz / TX G Mode 2462MHz			
Remark:	The EUT is programed in continuously transmitting mode			
★ Agilent				
			Mlar4 0 4420E CLI-	



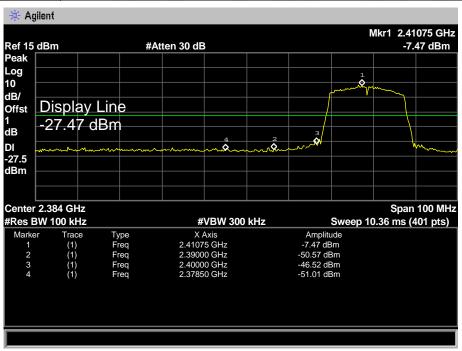


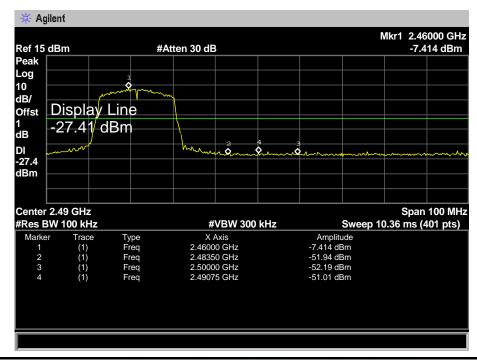




Page: 61 of 79

EUT:	WIFI Card Reader	Model:	WDM-X5			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V					
Test Mode:	TX N(HT20) Mode 2412MHz / TX N(HT20) Mode 2462MHz					
Remark:	The EUT is programed in continuously transmitting mode					







Page: 62 of 79

7. Bandwidth Test

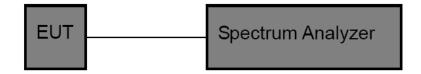
7.1 Test Standard and Limit

7.1.1 Test Standard FCC Part 15.247 (a)(2)

7.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/RSS-210					
Test Item	Test Item Limit Frequency Range(MHz)				
Bandwidth	>=500 KHz (6dB bandwidth)	2400~2483.5			

7.2 Test Setup



7.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
- (3)Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:100 kHz, and Video Bandwidth:300 kHz, Detector: Peak, Sweep Time set auto.

7.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.



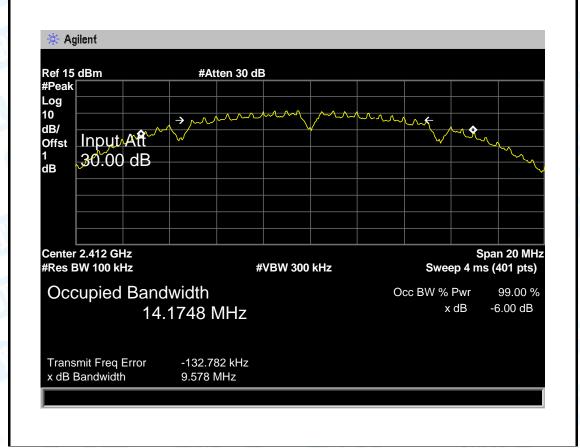
Page: 63 of 79

7.5 Test Data

EUT:	WIFI Card Reader	Model:	WDM-X5
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Test Mode:	TX 802.11B Mode	2 Philips	
Channel frequence	cy 6dB Bandwidth	99% Bandwidth	Limit
(MHz)	(MHz)	(MHz)	(MHz)
2412	9.578	14.1748	
2437	9.586	14.1373	>=0.5
2462	9.586	14.1009	

802.11B Mode

2412 MHz



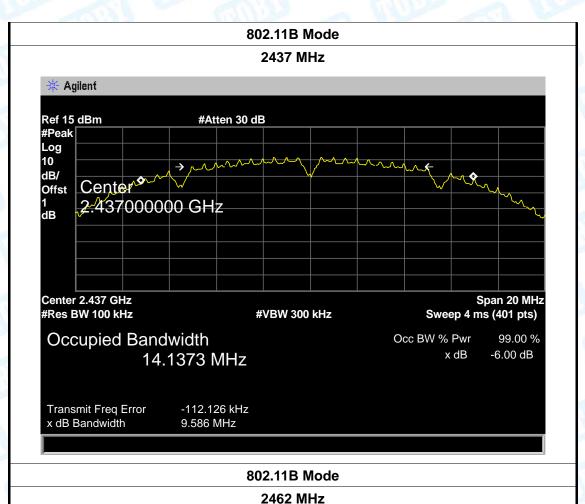




x dB Bandwidth

9.586 MHz

Page: 64 of 79



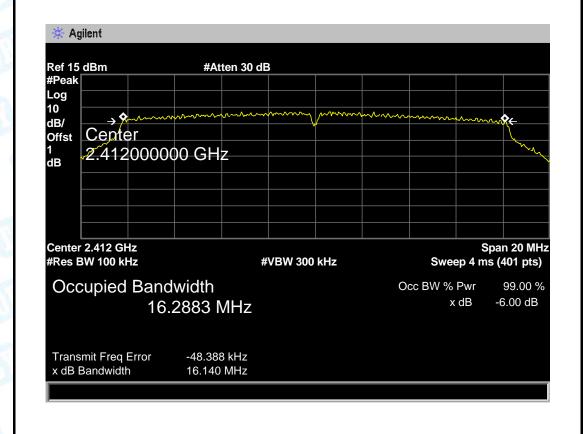
🔆 Agilent Ref 15 dBm #Atten 30 dB #Peak Log 10 dB/ Center Offst 1 dB 2.462000000 GHz Center 2.462 GHz Span 20 MHz #Res BW 100 kHz Sweep 4 ms (401 pts) **#VBW 300 kHz** Occupied Bandwidth Occ BW % Pwr 99.00 % -6.00 dB x dB 14.1009 MHz Transmit Freq Error -69.908 kHz



Page: 65 of 79

	W///EI O I D I		14/5141/5	
EUT:	WIFI Card Reader	Model:	WDM-X5	
Temperature:	25 ℃	Relative Humidity:	55%	
Test Voltage:	DC 3.7V			
Test Mode:	TX 802.11G Mode			
Channel frequence	cy 6dB Bandwidth	99% Bandwidth	Limit	
(MHz)	(MHz)	(MHz)	(MHz)	
2412	16.140	16.2883		
2437	16.320	16.2783	>=0.5	
2462	16.333	16.2861	7	
802.11G Mode				

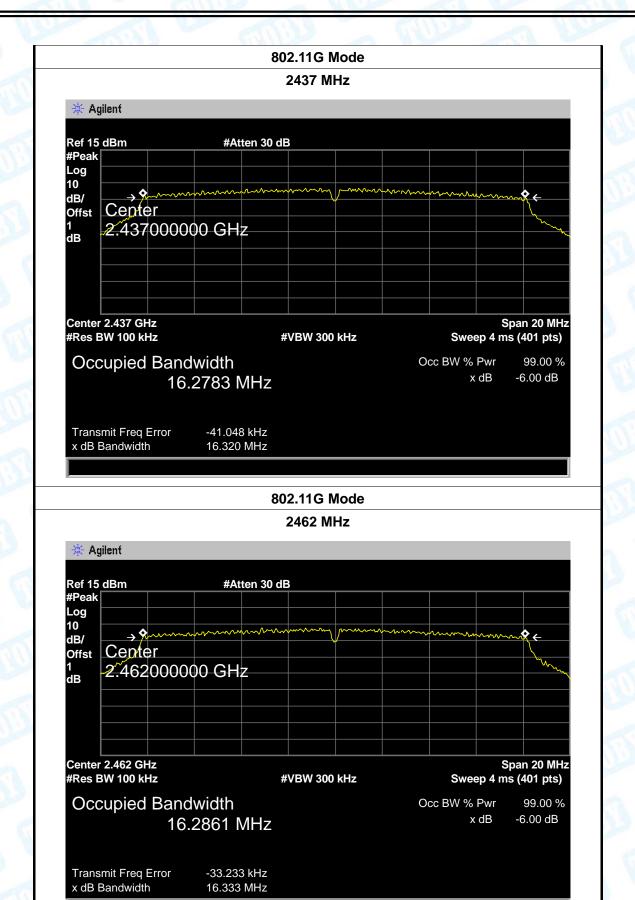
2412 MHz





Page: 66 of 79



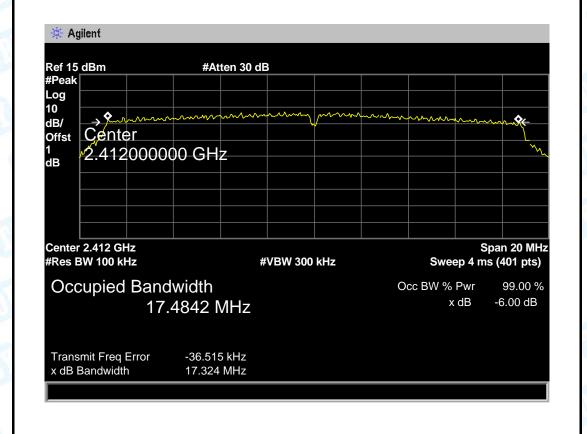




67 of 79 Page:

EUT:	WIFI Card Reader	Model:	WDM-X5	
Temperature:	25 ℃	Relative Humidity:	55%	
Test Voltage:	DC 3.7V			
Test Mode:	TX 802.11N(HT20) Mode			
Channel frequence	cy 6dB Bandwidth	99% Bandwidth	Limit	
(MHz)	(MHz)	(MHz)	(MHz)	
2412	17.324	17.4842		
2437	16.987	17.4824	>=0.5	
2462	16.946	17.4712		
802.11N(HT20) Mode				

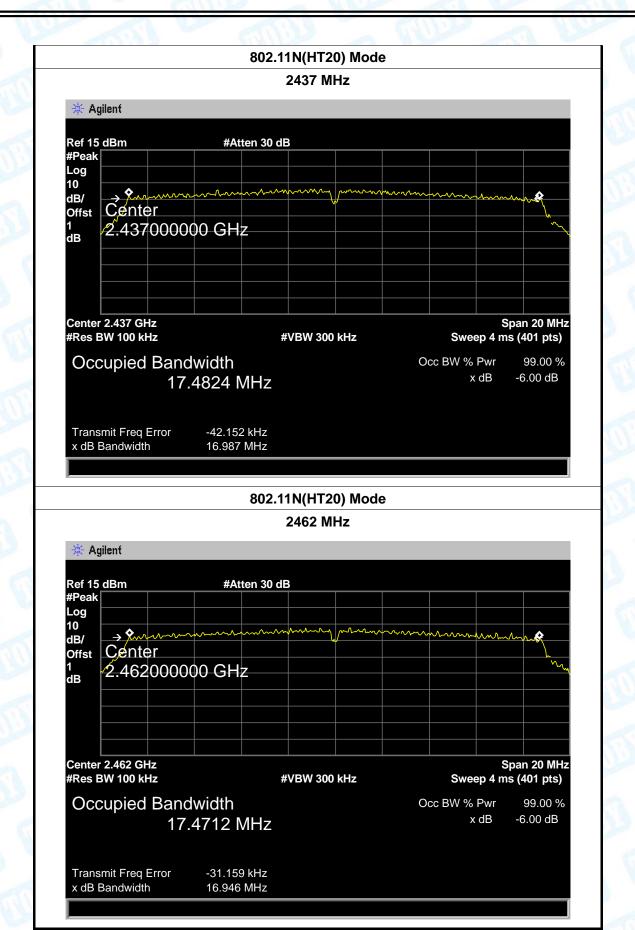
2412 MHz





Page: 68 of 79







Page: 69 of 79

8. Peak Output Power Test

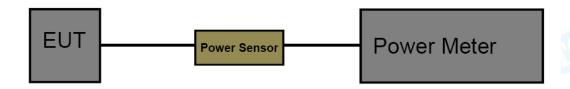
8.1 Test Standard and Limit

8.1.1 Test Standard FCC Part 15.247 (b)

8.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/RSS-210					
Test Item Limit Frequency Range(MH					
Peak Output Power	1 Watt or 30 dBm	2400~2483.5			

8.2 Test Setup



8.3 Test Procedure

The measurement is according to section 9.1.2 of KDB 558074 D01 DTS Meas Guidance v03r05.

The EUT was connected to RF power meter via a broadband power sensor as show the block above. The power sensor video bandwidth is greater than or equal to the DTS bandwidth of the equipment.

8.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.



Page: 70 of 79

8.5 Test Data

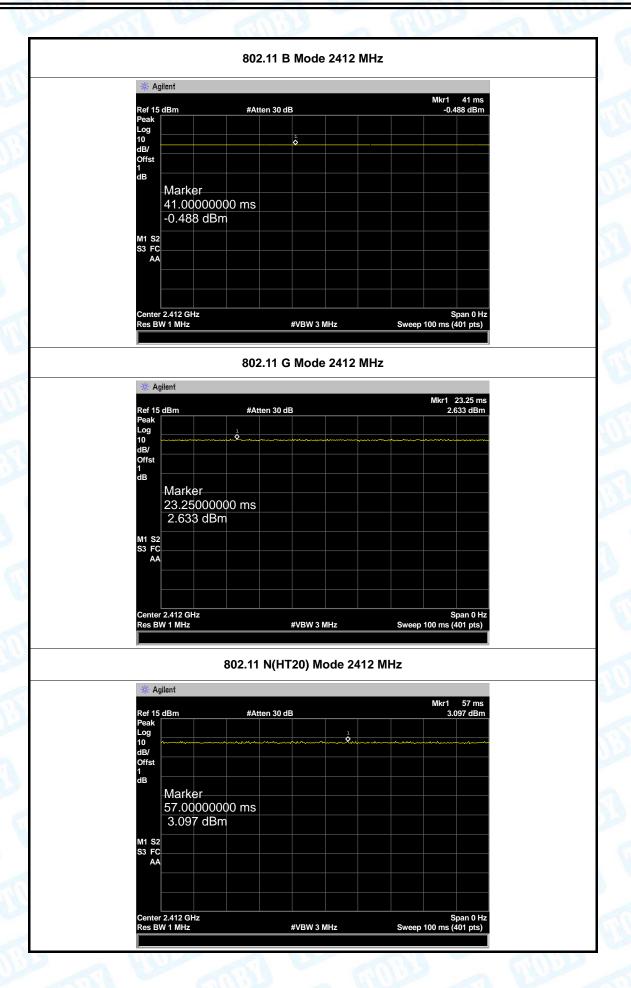
	MARIE 0 15		14/514.1/5
EUT:	WIFI Card Reader	Model Name :	WDM-X5
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Mode	Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
	2412	9.25	
802.11b	2437	9.21	
	2462	9.28	
	2412	9.15	
802.11g	2437	9.13	30
	2462	9.12	
000 44 =	2412	9.05	
802.11n (HT20)	2437	9.08	
(11120)	2462	9.10	
	Resi	ult: PASS	

	Duty Cycle	
Mode	Channel frequency (MHz)	Test Result
802.11b	2412	
	2437	
	2462	
	2412	
802.11g	2437	>98%
802.11n	2462	
	2412	
	2437	
(HT20)	2462	



Page: 71 of 79







Page: 72 of 79

9. Power Spectral Density Test

9.1 Test Standard and Limit

9.1.1 Test Standard FCC Part 15.247 (e)

9.1.2 Test Limit

FCC Part 15 Subpart C(15.247)				
Test Item	Limit	Frequency Range(MHz)		
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5		

9.2 Test Setup



9.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v03r05.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyser center frequency to DTS channel center frequency.
- (3) Set the span to 1.5 times the DTS bandwidth.
- (4) Set the RBW to: 3 kHz(5) Set the VBW to: 10 kHz
- (6) Detector: peak(7) Sweep time: auto
- (8) Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

9.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.

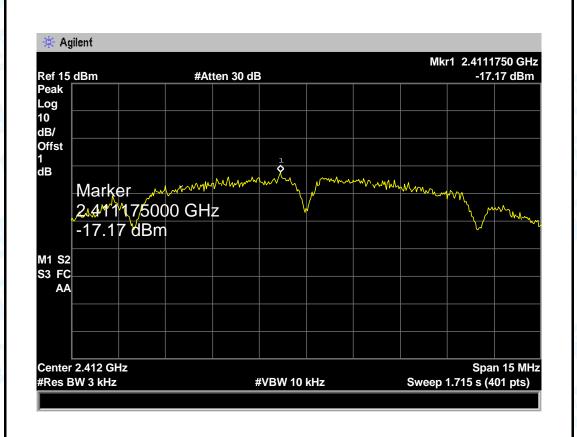


Page: 73 of 79

9.5 Test Data

EUT:	WIFI Card Reader		Model:	WDM-X5	
Temperature:	25 ℃		Relative Humidity:	55%	
Test Voltage:	DC 3.7V			CALL PARTY	
Test Mode:	TX 802.1	TX 802.11B Mode			
Channel Frequency		Power Density		Limit (dBm)	
(MHz)		(3 kHz/dBm)			
2412	-17.17		-17.17		
2437	2437		7.78	8	
2462	-1		6.67		
802.11B Mod		B Mode			

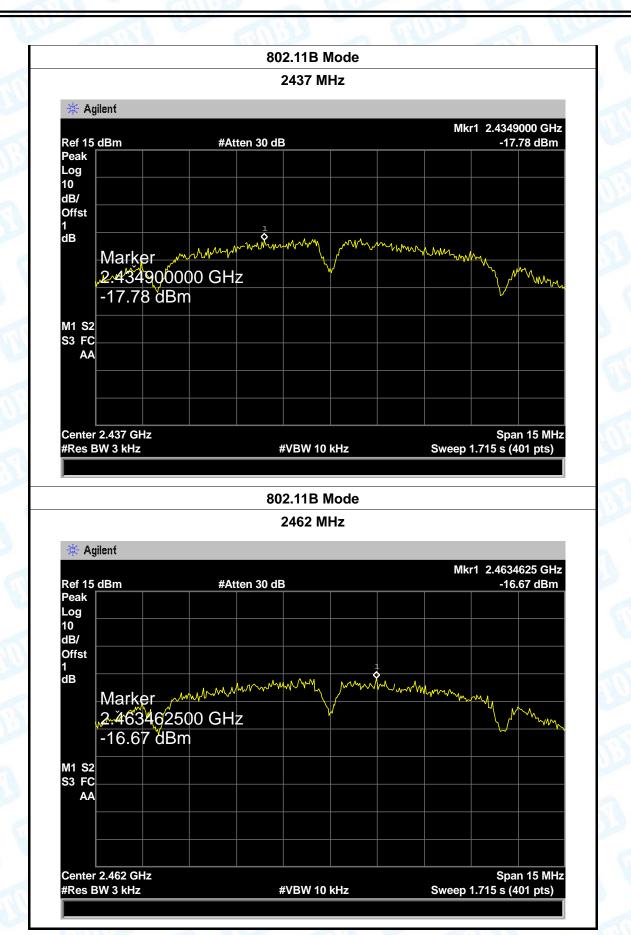
2412 MHz





Page: 74 of 79







Mmy

Center 2.412 GHz #Res BW 3 kHz Report No.: TB-FCC148051

Page: 75 of 79

UT:	WIFI Card Reader		Model:		WDM-X5	
emperature:	25 ℃		Temperature:		25 ℃	
est Voltage:					ans s	
est Mode:	TX 802.11	1G Mode	MUL			
Channel Fred	quency	Powe	er Density		Limit	t (dBm)
(MHz)		(3 k	Hz/dBm)			
2412		-	19.99			
2437		-	20.27			8
2462		-19.63				
		802.	11G Mode	<u> </u>		
* 5t		24	12 MHz			
* Agilent			12 MHz		Mkr1	2.40696 GHz
Ref 15 dBm Peak		#Atten 30 dB	12 MHz		Mkr1	2.40696 GHz -19.99 dBm
Ref 15 dBm Peak Log			12 MHz		Mkr1	
Ref 15 dBm Peak Log 10 dB/			12 MHz		Mkr1	
Ref 15 dBm Peak Log 10 dB/ Offst 1			12 MHz		Mkr1	
Ref 15 dBm Peak Log 10 dB/ Offst 1 dB		#Atten 30 dB				
Ref 15 dBm Peak Log 10 dB/ Offst 1 dB Marke	er www.	#Atten 30 dB	12 MHz			
Ref 15 dBm Peak Log 10 dB/ Offst 1 dB Marke 2.406		#Atten 30 dB				
Ref 15 dBm Peak Log 10 dB/ Offst 1 dB Marke 2.406	er ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	#Atten 30 dB				

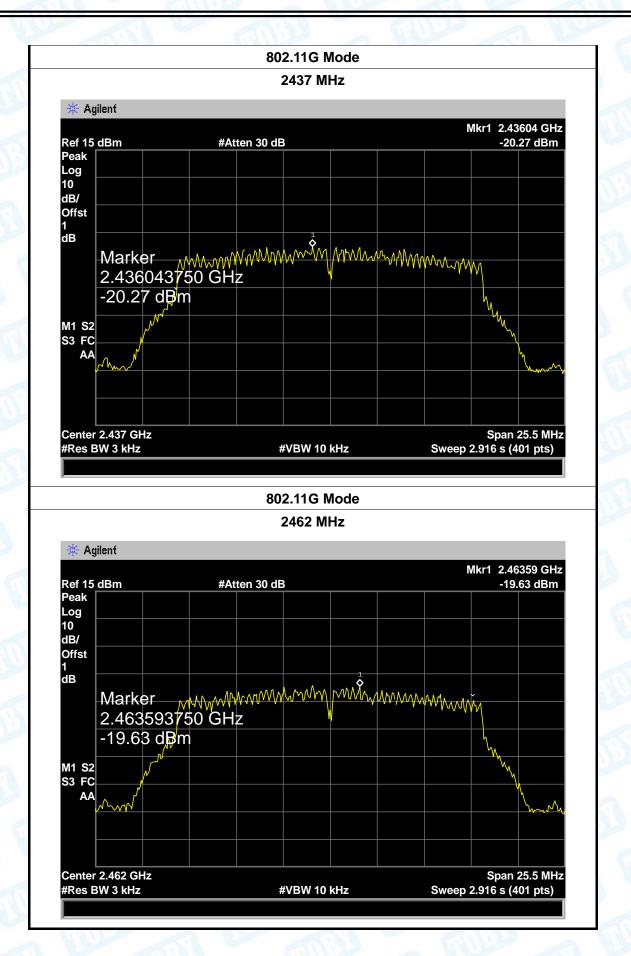
#VBW 10 kHz

Span 25.5 MHz Sweep 2.916 s (401 pts)



Page: 76 of 79







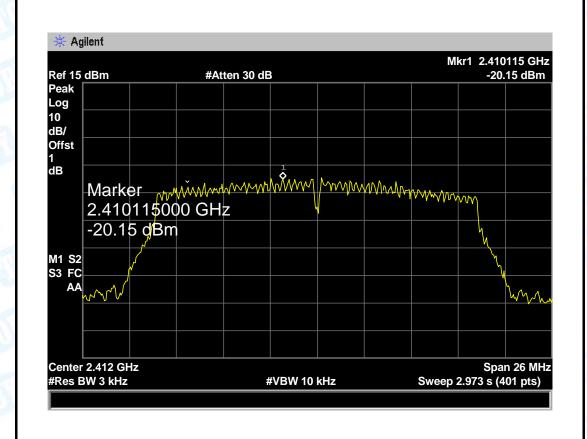
Report No.: TB-FCC148051

77 of 79 Page:

EUT:	WIFI Card	d Reader	Model:	WDM-X5
Temperature:	25 ℃	100	Temperature:	25 ℃
Test Voltage:	DC 3.7V	Contract of the second	(3) V	
Test Mode:	TX 802.11	1N(HT20) Mode		
Channel Frequency	uency	Power	Density	Limit (dBm)
(MHz)		(3 kHz	/dBm)	
2412		-20	.15	
2437		-20	.35	8
2462		-20	.95	

802.11N(HT20) Mode

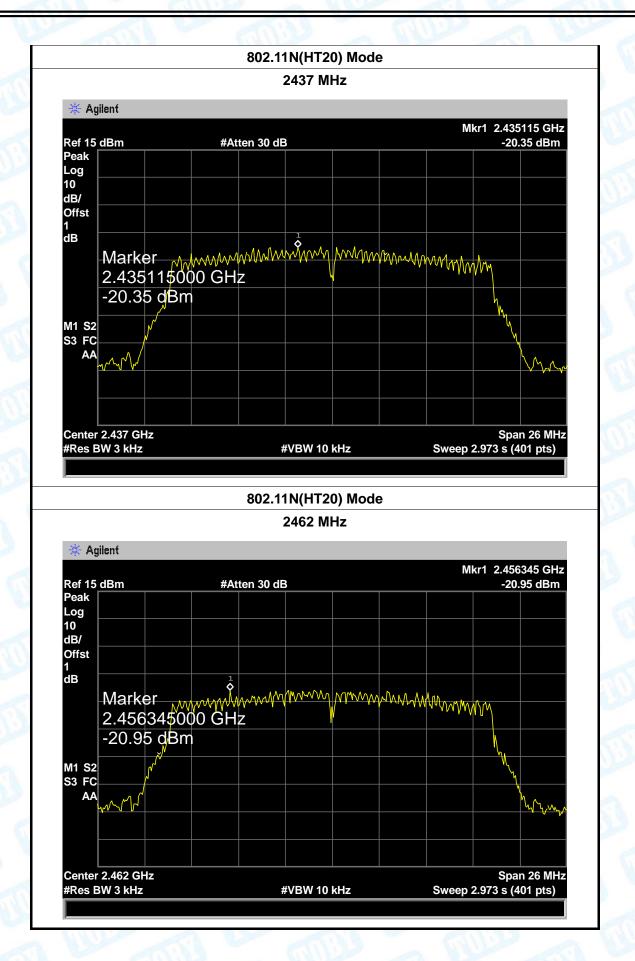
2412 MHz





Page: 78 of 79







Page: 79 of 79

10. Antenna Requirement

10.1 Standard Requirement

10.1.1 Standard FCC Part 15.203

10.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

10.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 1.8 dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

Result

The EUT antenna is a PCB Antenna. It complies with the standard requirement.

	Antenna Type
	▶ Permanent attached antenna
Minn	□ Unique connector antenna
	□ Professional installation antenna